



MICHIGAN DEPARTMENT OF
ENVIRONMENT, GREAT LAKES, AND ENERGY

Water Use Advisory Council

December 14, 2021

1. Welcome

WUAC Chair Order for 12/14/21

- Bryan Burroughs, Executive Director (Items 1-8)
Michigan Trout Unlimited
- Brian Eggers, Principal (Items 9-12)
AKT Peerless Environmental

Water Use Advisory Council (WUAC) Meeting

Hosted by the Department of Environment, Great Lakes, and Energy (EGLE)

Tuesday, December 14, 2021

1:00 p.m.- 3:00 p.m.

Con Con Conference Room

South Atrium, Constitution Hall

525 West Allegan

Lansing, MI 48933

Remote Option Available Via Teams

[Click here to join the meeting](#)

Or call in (audio only)

[+1 248-509-0316, 822050619#](#) United States, Pontiac

Phone Conference ID: 822 050 619#

AGENDA

1. Welcome
2. Roll Call
3. Approval of Agenda-Roll Call Vote
4. Approval of Minutes-Roll Call Vote
5. Public Comment (3 Minute Limit)
6. Legislative Update, Bryan Burroughs
7. Monitoring Well Network Update, Jason Walther/Kelly Turner
8. Committee Chairs Reports
 - A. Data Collection Committee
 - B. Implementation Committee
 - C. Models Committee
 - D. New Topics Committee
 - E. Conservation and Efficiency Committee
9. EGLE Update
10. Next Meeting Dates and Formats
11. Open Comments (3 Minute Limit)
12. Motion to Adjourn



2. Roll Call



3. Approval of Agenda –Roll Call Vote



4. Approval of Minutes—Roll Call Vote

5. Public Comment

6. Legislative Update

7. Monitoring Well Network Update

A large center pivot irrigation system is shown in a lush green field. The system consists of a long metal arm supported by a series of yellow and blue truss structures, with multiple wheels visible. The arm extends from the right side of the frame towards the horizon. The field is filled with rows of green crops. The sky is a clear, pale blue with a few wispy clouds. The overall scene is bright and sunny.

Groundwater Withdrawals in Michigan

The need to make regulatory decisions from scientific data



Michigan Water Withdrawal Assessment Program

Administered by EGLE (MI Department of Environment, Great Lakes, and Energy) since the inception 13 years ago.

- Use the Michigan Water Withdrawal Assessment Tool (Mi-WWAT) screening tool to predict possible adverse resource impacts
- Site-Specific Review process is in place to take more in-depth look at the real impact to the water resource

A background image showing a hand dropping a seed into soil, with a small green plant growing out of the soil. The scene is set against a warm, golden-brown background.

Site Specific Review Process

- No written standards or procedures for data collection, aquifer testing, or modeling
- New data required by EGLE for Site Specific Reviews is increasing and inconsistent
- Costs now typically exceed \$60,000 per registration with no guarantee of approval
- Costs are borne solely by applicant

A large blue industrial valve with a handwheel and a vertical pipe, situated in a dry, sandy field with sparse vegetation. In the background, there is a vast green field under a clear sky.

The Issue

- The State is regulating large quantity water wells using analytical models while maintaining an active network of only 26 monitoring wells.
- Need for additional groundwater data is urgent to ensure:
 - ✓ Ability to optimize use of groundwater resources
 - ✓ Protection of ground and surface water resources

The Group



The background of the slide is a photograph of the Michigan State Capitol building at night. The building is illuminated with warm yellow lights, and its large, ornate dome is the central focus. The sky is a deep blue with some light clouds. In the foreground, there are dark silhouettes of trees and some city lights.

The Solution

The State of Michigan partners with a professional hydrogeologic consulting firm(s) to create a new self-sustaining monitoring well network with shared data

The legislature provides:

One-time funding of \$25 million
for the **installation of up to 500** monitoring
wells and 3 years of data collection

A man in a light-colored button-down shirt and blue jeans stands in a field of tall, green crops. In the background, a large electrical transmission tower is visible against a hazy, yellowish sky. The overall scene suggests a rural or agricultural setting.

The Deliverables

Network consisting of a minimum of 500 wells and a minimum of three years of data collection with no legacy costs to the taxpayers of Michigan and will provide:

1. Verify the local geology
2. Directly measure the impact of the high-capacity wells
3. Demonstrate the seasonal and long-term water level trends
4. Determine the aquifer storage and hydraulic conductivity values
5. Serve as a warning system for depletion

Questions?



Dr. Kelly Turner

Kelly@mipotato.com

248-343-0916

8. Committee Chair Reports

A. Data Collection Committee

Bryan Burroughs

B. Implementation Strategies Committee

Laura Campbell
Doug Needham

- Committee met October 21, 2021
- Discussed the status of funding for the 2020 WUAC Report Recommendations
- Began discussions about ideas and recommendations for the 2022 WUAC Report

The WUAC Implementation Strategy Committee requests that the following items be dropped from the recommendations that were identified in the 2014 WUAC report

The WUAC Implementation Strategy Committee requests that the following item be dropped from the recommendations that were identified in the 2014 WUAC report

- TU 2.2
 - Make the WWAT registration number a required field in Wellogic (and on paper well logs) for high-capacity wells.
- Reason for recommending that this item be closed
 - EGLE is currently able to run Wellogic to identify pumps with capacity of over 70 gallons per min so there is no need to make this be a required field. Also, the Drinking Unit water does not support this recommended change as it is impossible to implement and there appears to be no support from industry and EGLE.

The WUAC Implementation Strategy Committee requests that the following item be dropped from the recommendations that were identified in the 2014 WUAC report

- TU 3.1
 - The process for checking the compliance of “as built” well construction details with WWAT and/or SSR registrations of groundwater LQWs should be automated. Discrepancies between these should be flagged for follow up by staff.
- Reason for recommending that this item be closed
 - This recommendation is not supported by EGLE DWEHD nor the MGWA. The process for checking this information is labor intensive but EGLE has added staff and is keeping up with issues. Also, there was a training recommendation in the 2014 Report (TU 3.2 – The DEQ should work with stakeholders to increase the understanding of Part 327 requirements for owners of newly constructed large capacity wells and increase compliance with the requirement to report differences between registered and “as built” well characteristics.) that will help resolve this issue moving forward.

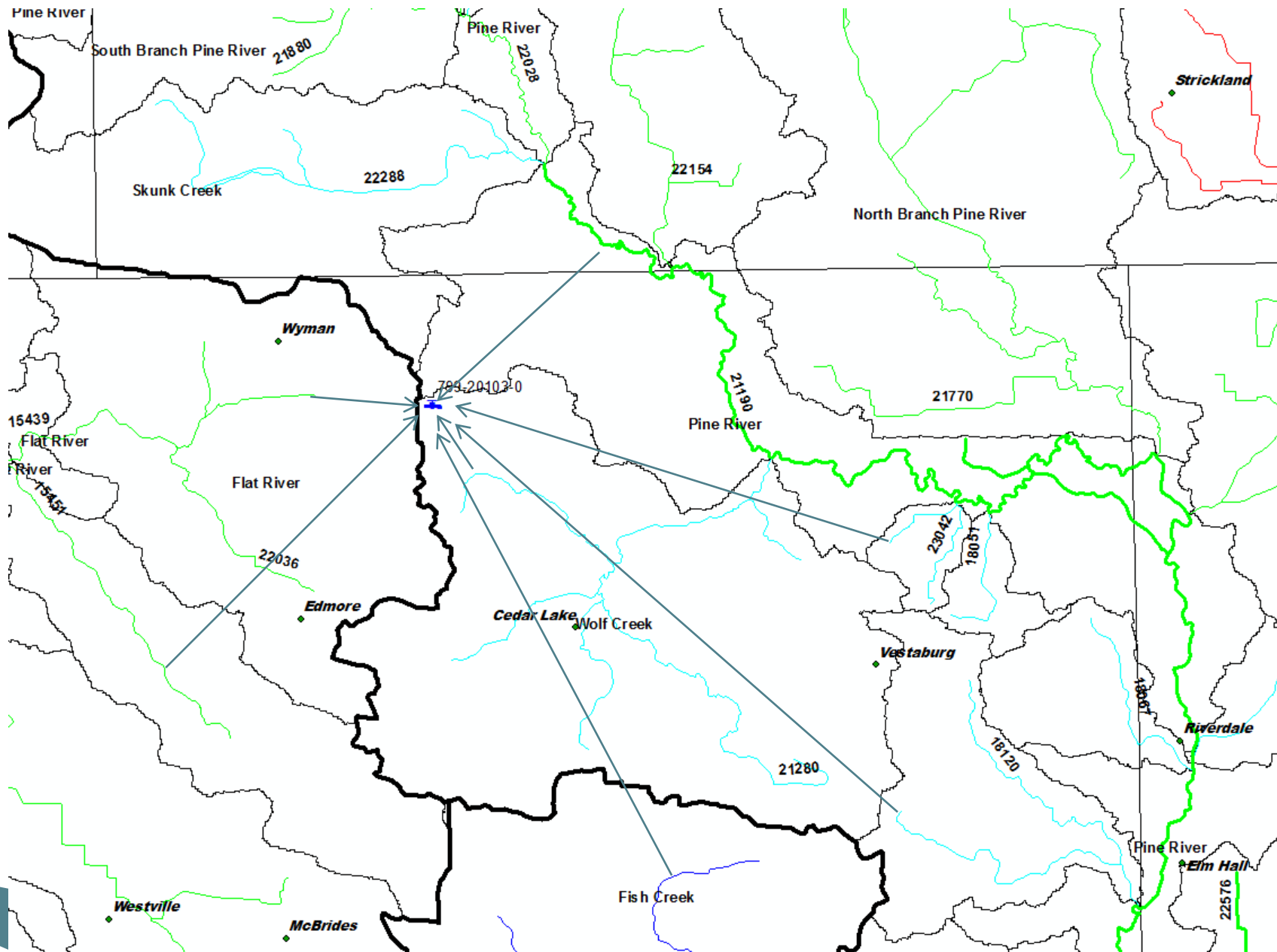
C. Models Committee

Dave Hamilton

Jim Nicholas

Water Use Advisory Council Models Committee

Revisiting the “Half Max Rule”
Streamflow Depletion
Apportionment



Depletions calculated by the WWAT

	WMA ID #	DEPLETION	
> ½ max	21280	82.7	- max
	22036	52.8	
	21190	21.6	
	15451	10.2	
	23042	6.0	
	22136	5.1	
	18120	3.4	

7 WMAs (1 home + 6 adjacent), 2 debited

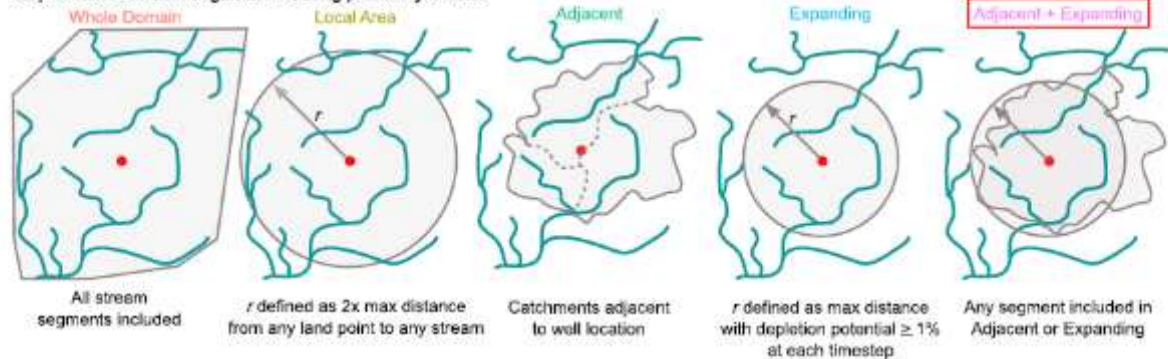
Rapid and Accurate Estimates of Streamflow Depletion Caused by Groundwater Pumping Using Analytical Depletion Functions

Samuel C. Zipper¹ , Tom Gleeson¹ , Ben Kerr², Jeanette K. Howard³, Melissa M. Rohde⁴, Jennifer Carah³, and Julie Zimmerman⁵

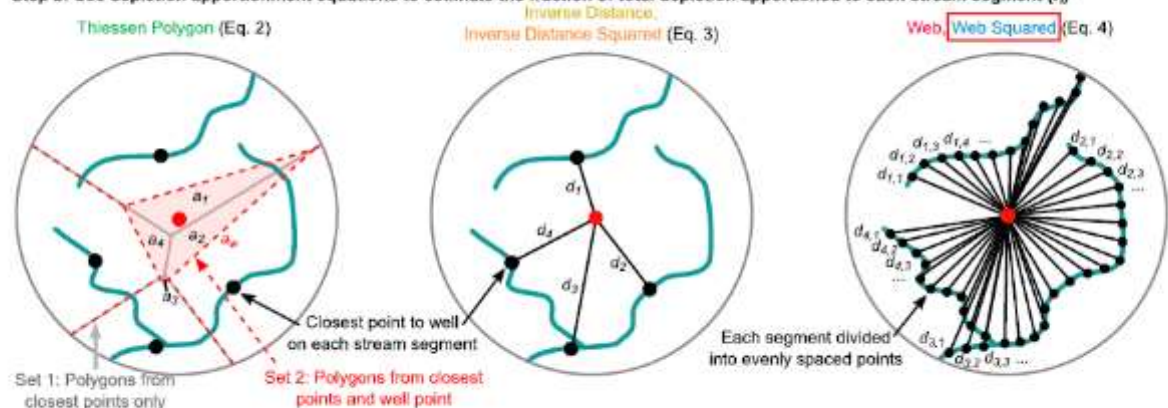
Overview of analytical depletion functions

Which stream segments will a proposed well impact, and how much will each stream segment be depleted?

Step 1: Select stream segments meeting proximity criteria



Step 2: Use depletion apportionment equations to estimate the fraction of total depletion apportioned to each stream segment (f_i)

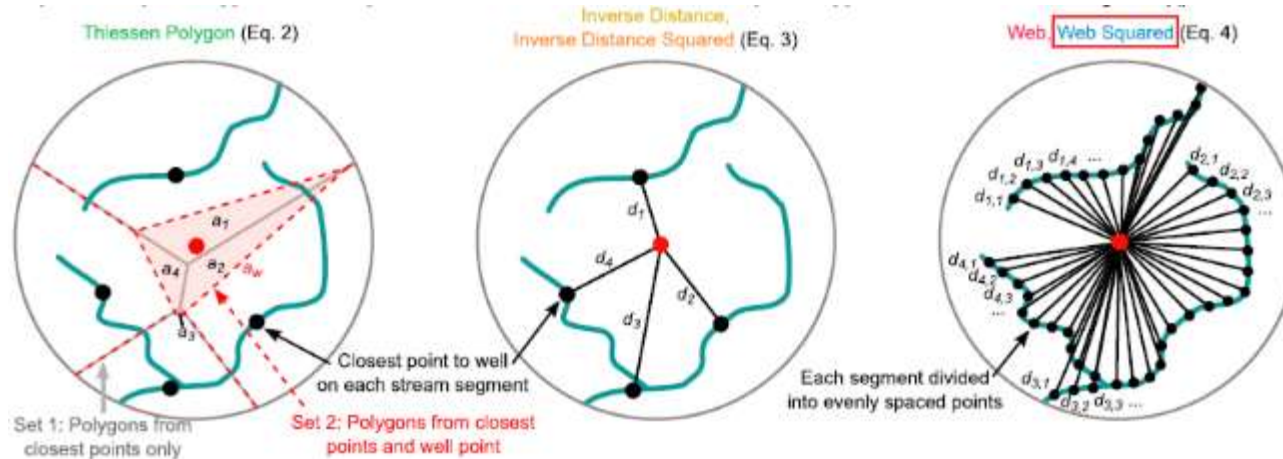


Step 3: Calculate streamflow depletion rate (Q_d) for each segment using analytical model

Glover & Balmer (1954), Eq. 5

OR

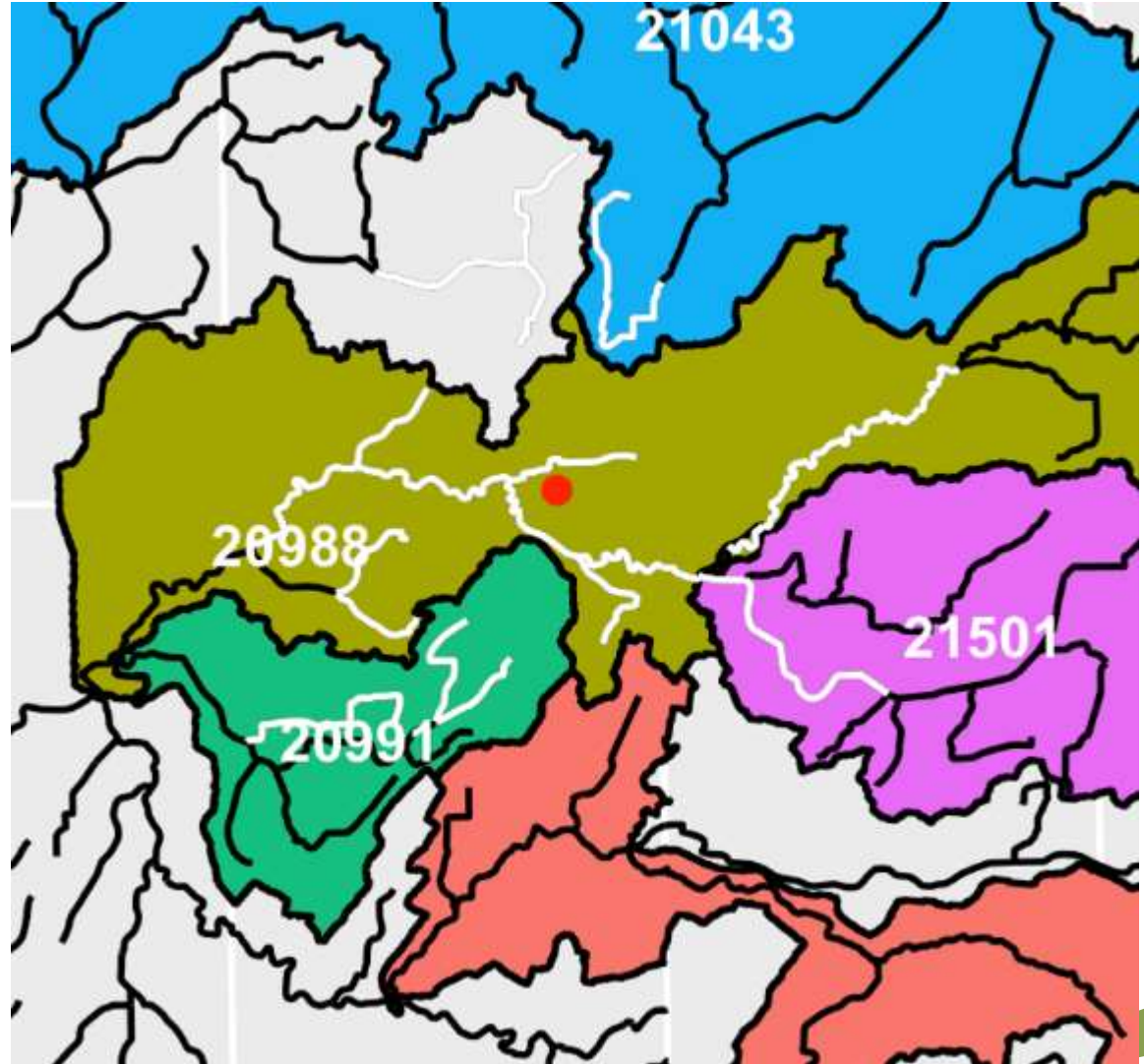
Hunt (1999), Eq. 6



Adjacent streams identified by stream segments with non-zero depletion fractions estimated by the Thiessen polygon depletion apportionment equation.

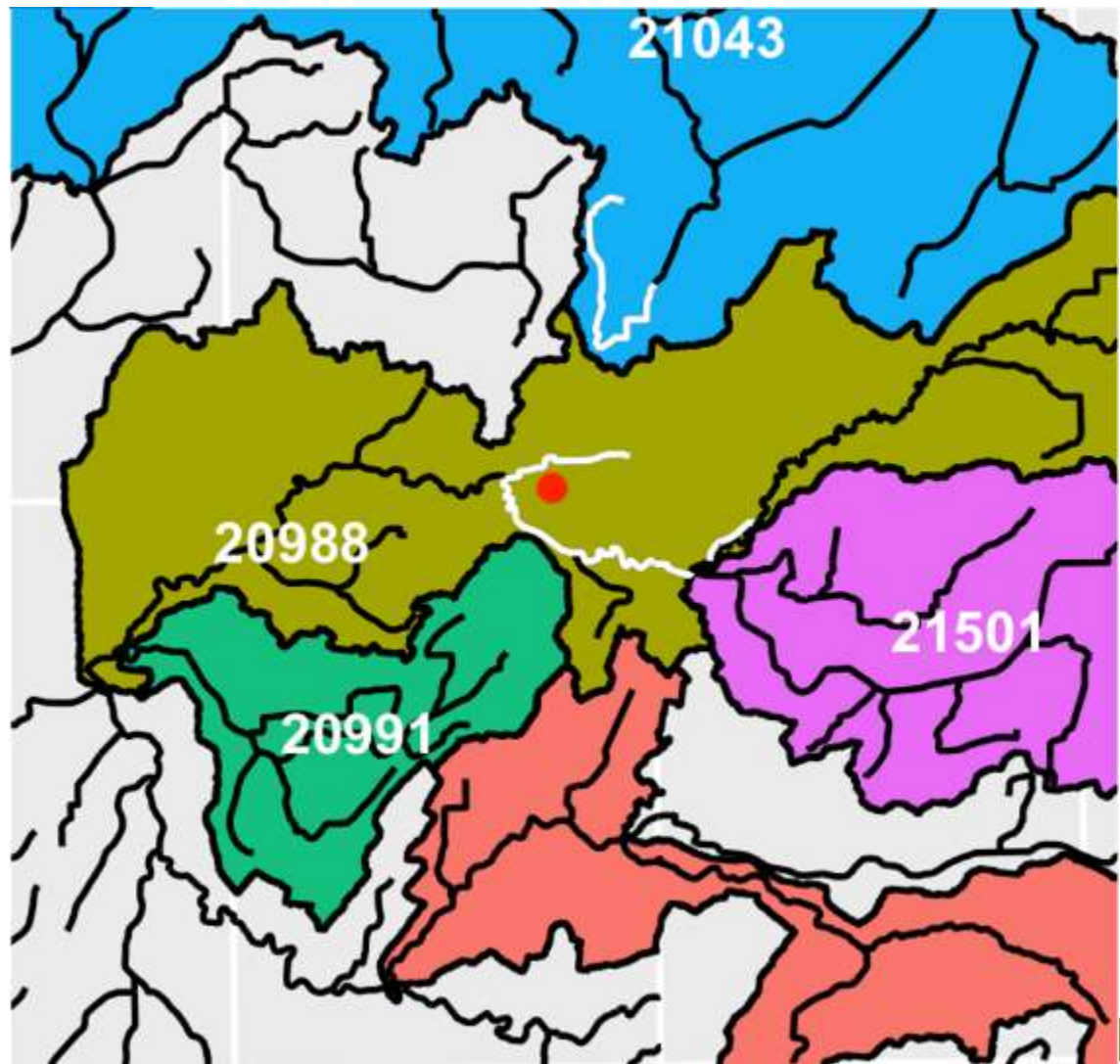


130 Stream segments
identified using “**adjacent and
expanding**”.



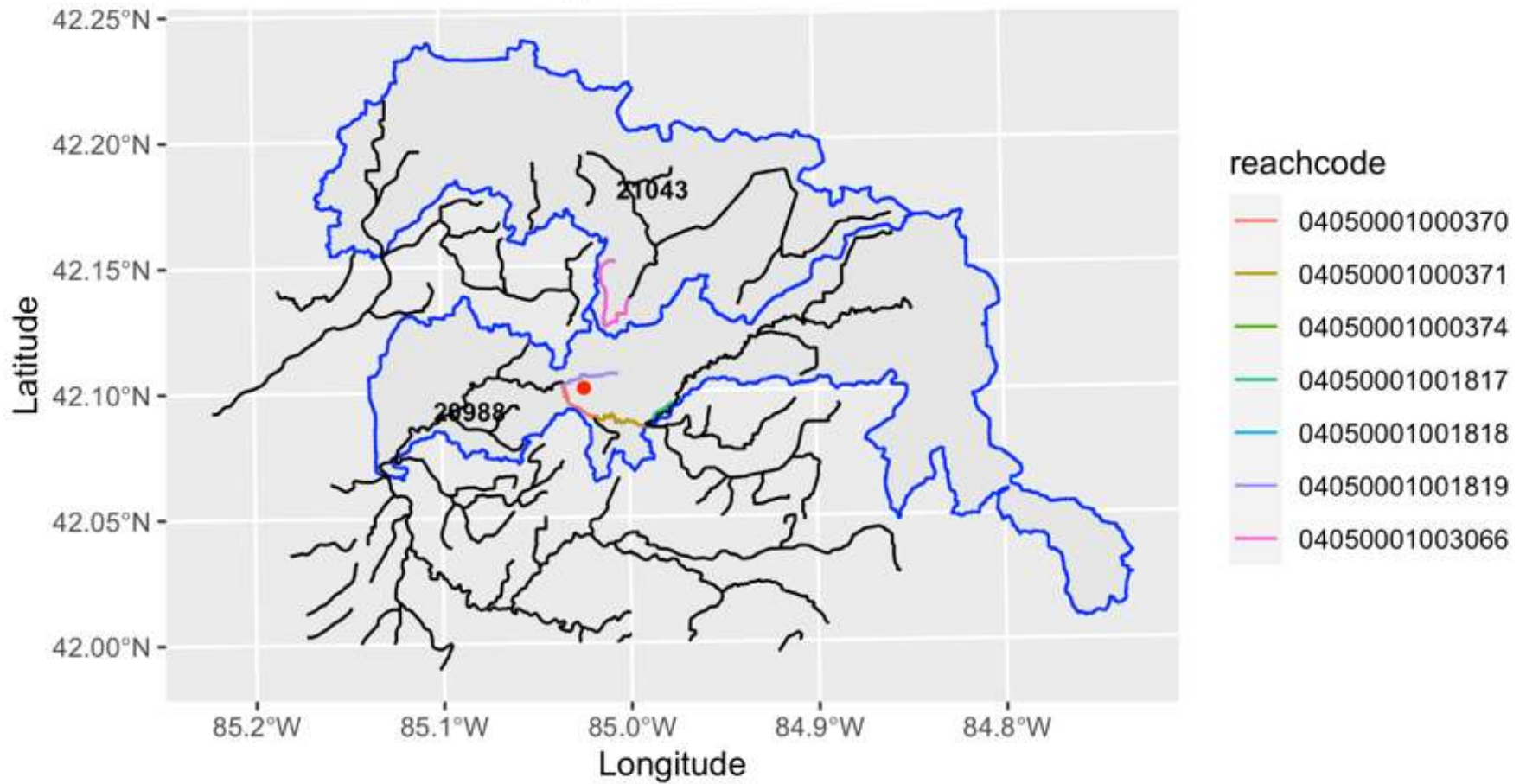
Calhoun2

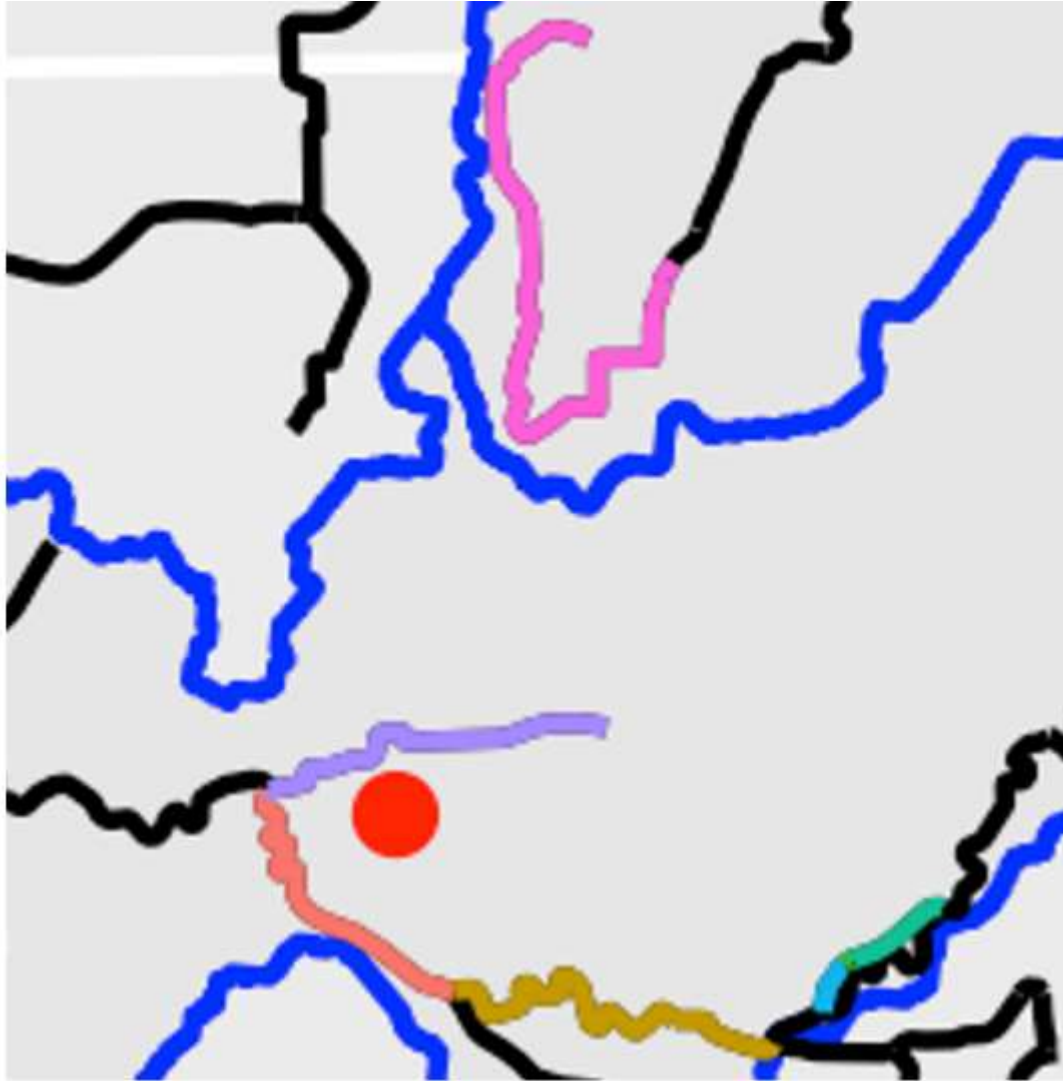
7 Stream segments identified using “adjacent”.



Calhoun2

Calhoun2 NHDPlus adjacent + WMAs

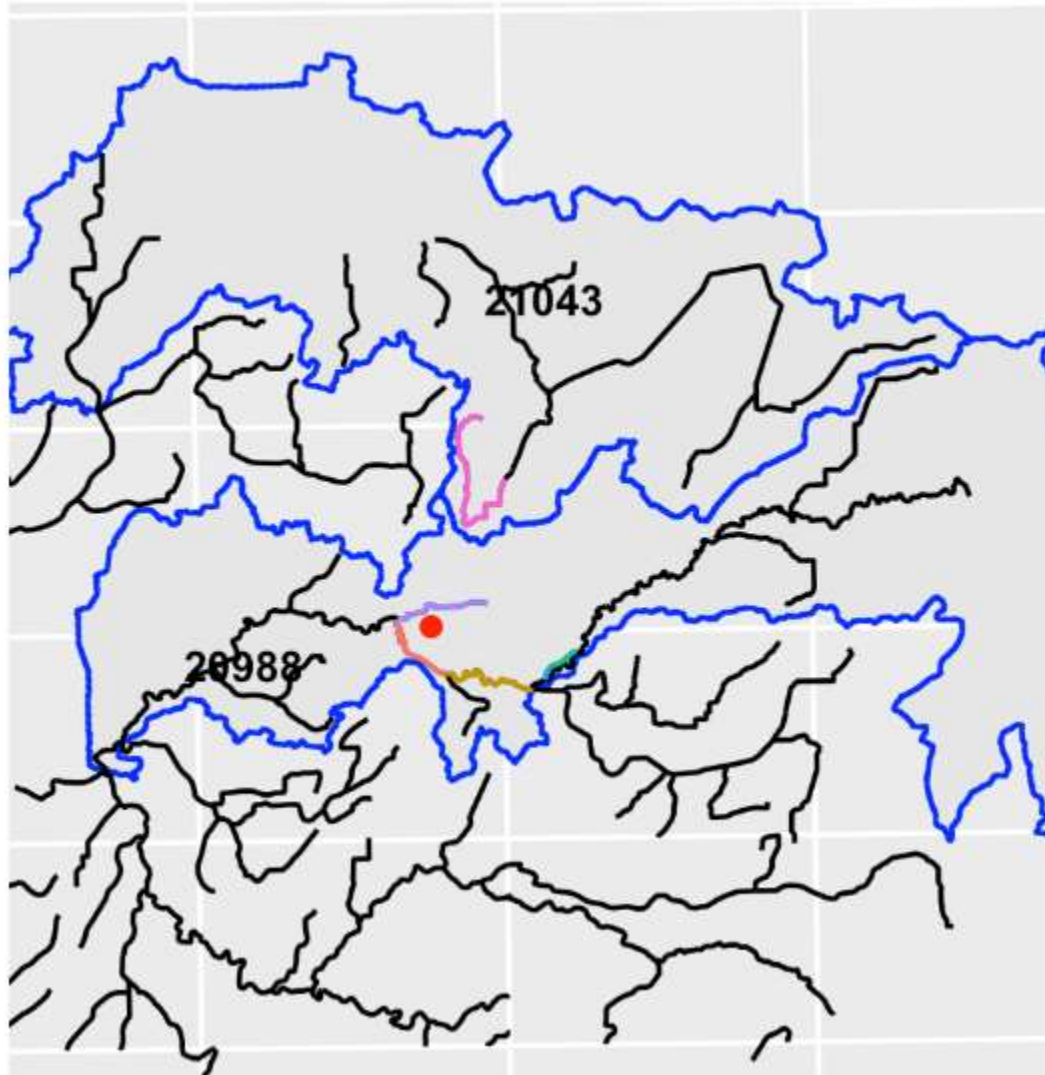




Calhoun2

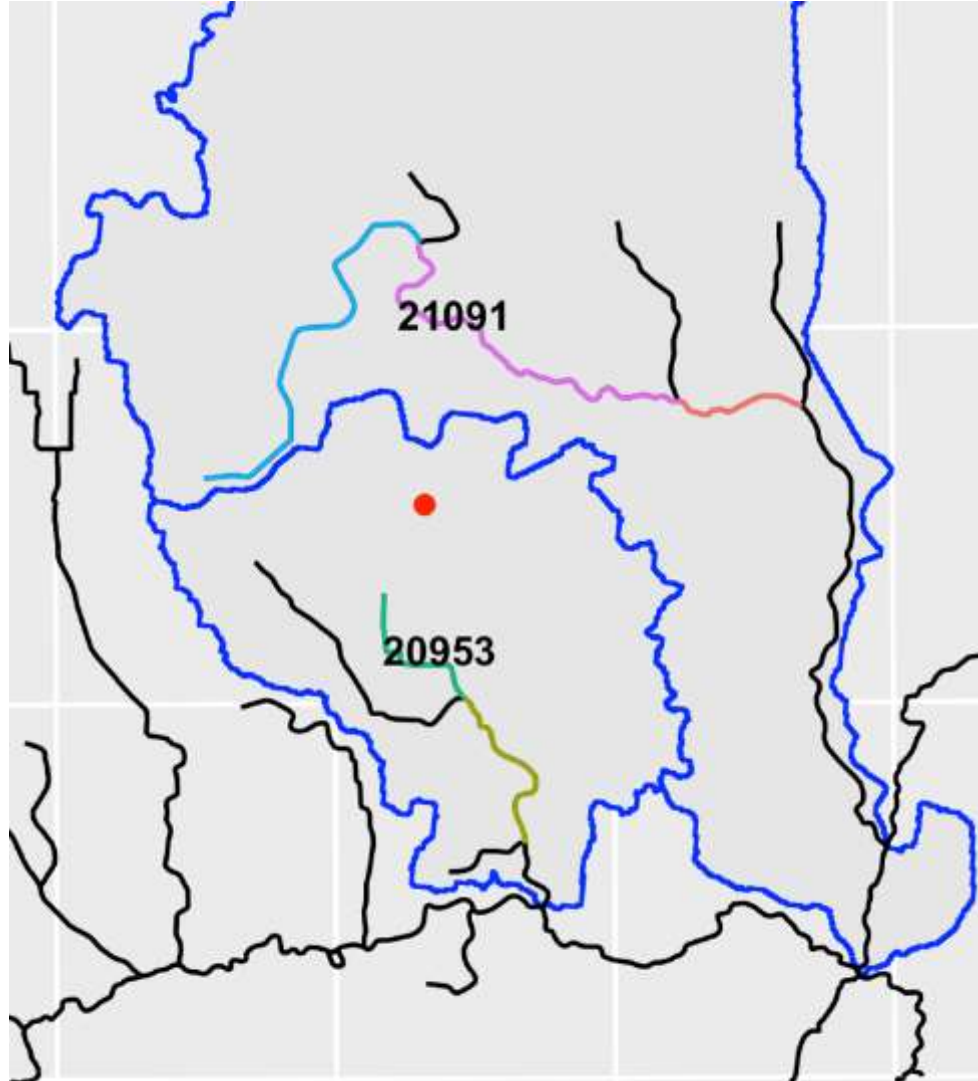
TestSite	Reach	Stream	Distance	Day	Qa	fi_w2	fi_w	fi_id2	fi_id	fiQa_w2	fiQa_w	fiQa_id2	fiQa_id	fiQa_w2_g	fiQa_id2_g	fiQa_id_gpm
Calhoun2	04050001001819		440.1235	1703	864.8839	0.583641	0.386219	0.674694	0.413349	504.7814	334.035	583.5324	357.4991	92.60366	107.0508	65.58428
Calhoun2	04050001000370	Saint Joseph River	804.4	1703	765.0891	0.280383	0.26638	0.201982	0.226162	214.5179	203.8043	154.534	173.034	39.35396	28.34973	31.74362
Calhoun2	04050001000371	Saint Joseph River	1333.591	1703	630.8478	0.088926	0.167991	0.073487	0.136417	56.09856	105.977	46.35915	86.05846	10.29145	8.504726	15.78768
Calhoun2	04050001003066		2882.748	1703	337.1377	0.037236	0.144034	0.015727	0.063108	12.5535	48.55931	5.302126	21.27611	2.302977	0.972691	3.903166
Calhoun2	04050001001817		3438.46	1703	270.0775	0.005734	0.021461	0.011054	0.052909	1.548618	5.796133	2.985497	14.28947	0.284099	0.547698	2.621445
Calhoun2	04050001001818		3333.289	1703	281.3346	0.0035	0.011904	0.011763	0.054578	0.984697	3.348953	3.30928	15.35472	0.180646	0.607097	2.816869
Calhoun2	04050001000374	Saint Joseph River	3401.941	1703	273.9137	0.000581	0.002011	0.011293	0.053477	0.1592	0.550723	3.09326	14.64801	0.029206	0.567468	2.687221
						1			1					145.046		125.1443
	ADJ_SEGMENTS			web2	web2 gpm	inv dist	inv dist gpm									
	20988	Saint Joseph River		0.95353	138.3	0.829405	103.8									
	21043			0.04647	6.7	0.170595	21.3									
				1	145.0	1	125.1									

Calhoun2



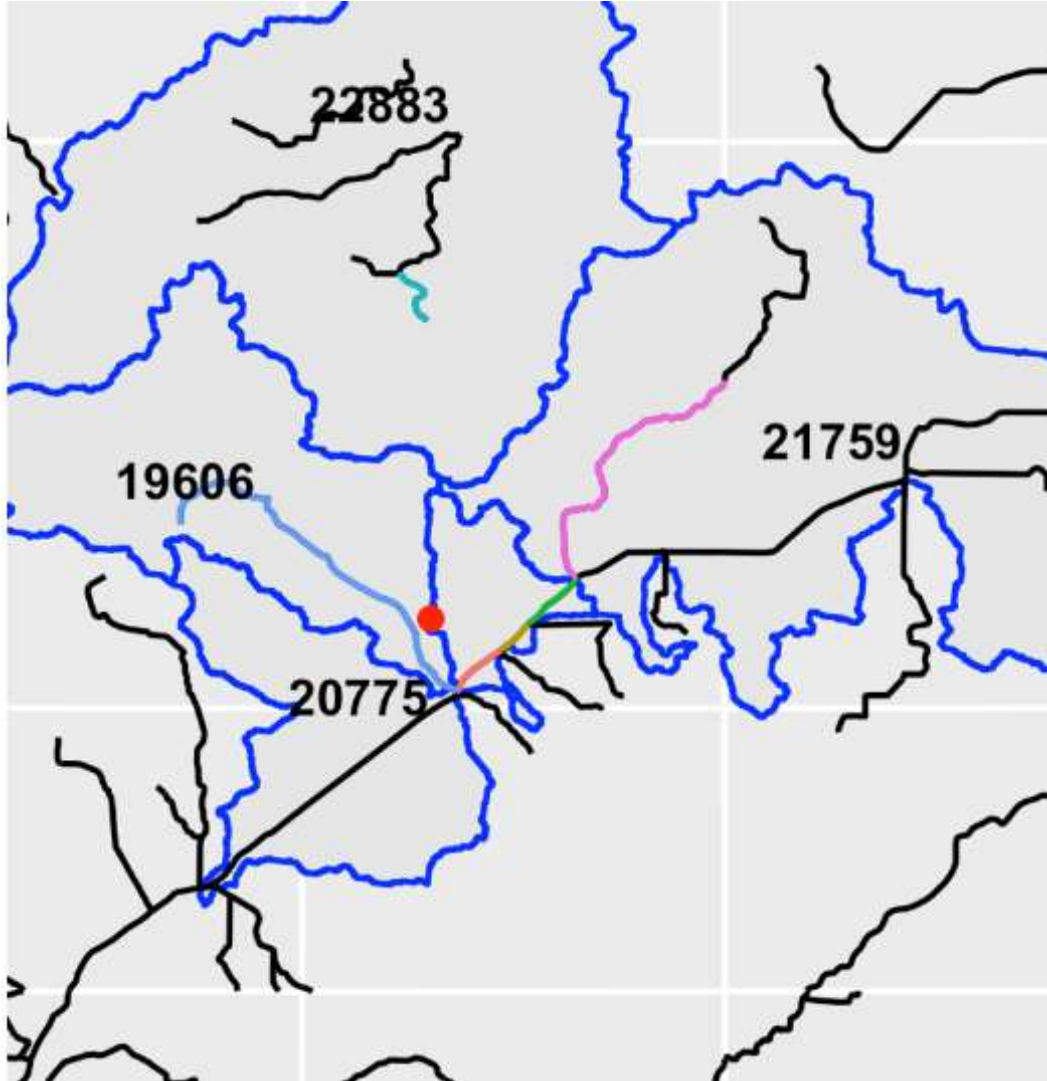
Calhoun2

Calhoun2					Recalculate w/ 1/2 max	web2	inv dist
WELLID	VALLEYSEGMENT	H/N	EST_DEPLETION	%			
3102-201310-18	20988	H	101.4		215.4	138.3	103.8
	Total "accounted"		101.4	79.2%			
3102-201310-18	22254	N	5.5				
3102-201310-18	21043	N	5.4			6.7	21.3
3102-201310-18	20991	N	5.0				
3102-201310-18	21501	N	4.5				
3102-201310-18	20711	N	2.5				
3102-201310-18	22290	N	1.0				
3102-201310-18	23057	N	0.7				
3102-201310-18	20712	N	0.7				
3102-201310-18	19575	N	0.5				
3102-201310-18	19618	N	0.3				
3102-201310-18	10753	N	0.2				
3102-201310-18	19580	N	0.1				
3102-201310-18	9937	N	0.1				
3102-201310-18	22529	N	0.1				
3102-201310-18	10535	N	0.1				
3102-201310-18	10445	N	0.0				
3102-201310-18	22931	N	0.0				
	Total "not counted"		26.7	20.8%			
	Total Calc Depletion		128.1			145	125.1



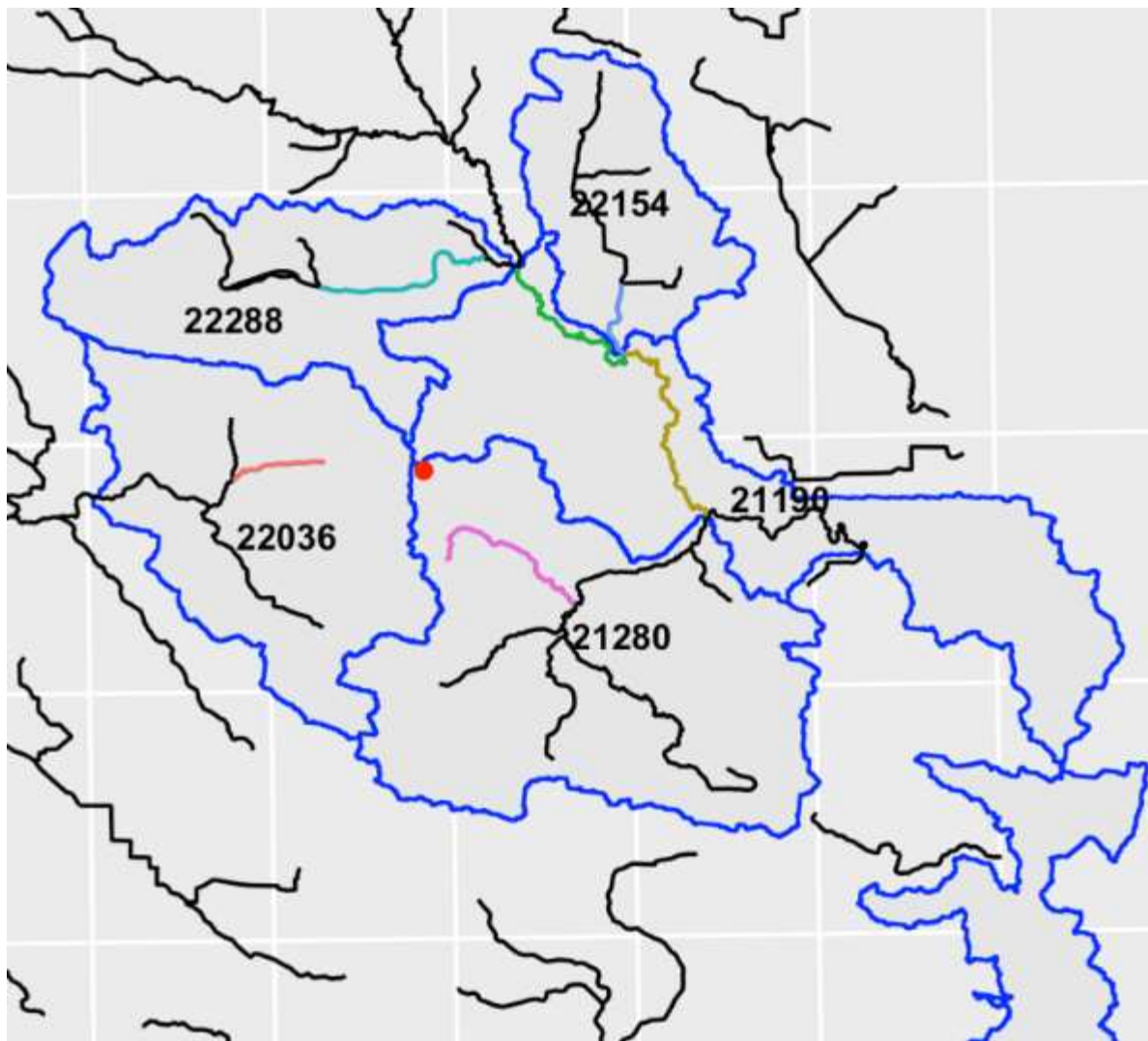
Kalamazoo2

Kalamazoo2					Recalculate w/ 1/2 max	web2	inv dist
WELLID	VALLEYSEGMENT	H/N	EST_DEPLETION	%			
2228-201212-11	20953	H	46.0		63.7	25.6	37.8
2228-201212-11	21091	N	24.0		33.3	54.2	40.9
	Total "accounted"		70.0	82.2%	97.0		
2228-201212-11	22260	N	11.0				
2228-201212-11	20790	N	4.2				
	Total "not counted"		15.2	17.8%			
	Total Calc Depletion		85.2			79.8	78.7



Cass2

Cass2					Recalculate w/ 1/2 max	web2	inv dist
WELLID	VALLEYSEGMENT	H/N	EST_DEPLETION	%			
1995-20129-18	19606	N	17.1		30.9	27.7	15.0
	Total "accounted"		17.1	57.1%			
1995-20129-18	20775	H	3.6		6.5	4.8	11.6
1995-20129-18	19610	N	2.9				
1995-20129-18	19625	N	2.6				
1995-20129-18	19608	N	2.0				
1995-20129-18	21759	N	1.0			1.4	2.1
1995-20129-18	22166	N	0.4				
1995-20129-18	22197	N	0.2				
1995-20129-18	23169	N	0.2				
	22883	N	na			0.1	1
	Total "not counted"		12.9	42.9%			
	Total Calc Depletion		30.0		37.4	34	29.7



Montcalm2

Montcalm2					Recalculate w/ 1/2 max	web2	inv dist
WELLID	VALLEYSEGMENT	H/N	EST_DEPLETION	%			
799-20103-0	21280	H	82.7		133.4	43.7	29.5
799-20103-0	22036	N	52.8		85.1	12.1	20.2
	Total "accounted"		135.5	74.5%	218.5		
799-20103-0	21190	N	21.6			20.6	19
799-20103-0	15451	N	10.2				
799-20103-0	23042	N	6.0				
799-20103-0	22136	N	5.1				
799-20103-0	18120	N	3.4				
	22154	N	na			3.4	8.8
	22288	N	na			12.2	11
	Total "not counted"		46.4	25.5%			
	Total Calc Depletion		181.9			92	88.5

Comparison original WWAT, WWAT w/total calc depletion, and web2						
Example	WWAT		WWAT w/total calc depl		web2	
	Depletion (gpm)	#WMAs Depleted	Depletion (gpm)	#WMAs Depleted	Depletion (gpm)	#WMAs Depleted
Montcalm1	202.6	1	203.4	7	204.3	3
Berrien1	5.4	1	7.3	9	9.4	3
Tuscola1	23.5	1	25.8	7	29.2	1
Montcalm2	135.5	2	181.9	7	92	5
St. Joseph1	76.7	1	98.2	7	96.3	2
St. Joseph2	147.4	2	184.5	4	183.8	4
Gratiot1	97.6	1	116.7	6	93.4	2
Calhoun2	101.4	1	128.1	18	145	2
Gratiot2	44	1	45.8	7	39.5	2
Iron1	33.4	2	42.5	6	48.1	3
Leelanau1	1.6	1	3	5	3.3	4
Oceana1	94	3	134.6	11	157.5	4
Ottawa1	26.7	1	29.1	11	26.3	4
Kalamazoo1	131.7	1	168.8	7	192.9	2
Kalamazoo2	70	2	85.2	4	79.8	2
Barry1	267.5	1	501	6	552.5	3
St. Joseph3	165	1	197.9	6	208.7	2
Cass1	56.9	2	71.9	5	73.3	3
Oceana2	1.1	1	2.1	6	2.3	3

Comparison original WWAT, WWAT w/total calc depletion, and web2						
Example	WWAT		WWAT w/total calc depl		web2	
	Depletion (gpm)	#WMAs Depleted	Depletion (gpm)	#WMAs Depleted	Depletion (gpm)	#WMAs Depleted
Calhoun1	628.1	1	982.8	18	1127.6	1
Cass2	17.1	1	30	9	34	4
StJoseph4	175.8	1	228.9	9	220.1	3
VanBuren1	2	1	2.8	5	3.2	2
Kalkaska1	15.1	1	26.4	7	30.3	4
Livingston1	1.5	2	1.6	10	1.4	2
Hillsdale1	265.5	2	415.6	7	457.6	3
Newago1	29.3	1	59.4	9	58.5	3
Berrien2	40.9	2	63.2	5	67.6	3
Newago2	151.3	1	187.2	9	267.3	1
St Joseph5	303.6	1	492.1	9	602.2	2

D. New Topics Committee

Pat Staskiewicz

Jason Walther

E. Conservation and Efficiency Committee

Emily Finnell
Kelly Turner

WCE Committee Update

- Continued speaker series
 - Yvonne Lewis, Consumers Energy, Residential Programs on Water Conservation,
 - James Clift, MI Healthy Climate Plan
 - Jeremiah Asher, New Topics Committee presentation on Groundwater Offset Program
 - Matt Yates, Resource Conservation Partners, January 6, 2022
- Dow Fellows Project Team
 - Submitted Draft Report for internal review
 - Final Report due December 10
 - Committee to review and discuss next steps based on report findings

WCE Committee Update

- Ag Efficiency Recommendation
 - Subgroup formed to make progress toward goals of recommendation
 - Developed a narrative to help legislators understand the need for the request
 - What is happening now for irrigation education and a bit of a needs assessment to show the gap that the recommendation would cover along with a sample position description.

WCE Committee in 2022

- Reviewing 2021 Work Plan and Developing 2022 Annual Work Plan
- Monthly meetings scheduled first Thursday at 9 am
- Continuing speaker series to generate discussion and broaden knowledge

Joint Aquatic Sciences Meeting, May 14-20,2022

- Organized by Consortium of Aquatic Science Societies including International Association for Great Lakes Research
- Hosted at DeVos Convention Center, Grand Rapids, MI
- Emily Finnell, OGL Co-Chair with Peter Johnson, Conference of Great Lakes Governors and Premiers
- Session - Improving and Implementing Water Conservation and Water Use Efficiency across the Great Lakes-St. Lawrence Basin to protect water and water dependent natural resources.
- Focus on: Priority research areas identified by Regional Body and Compact Council for 2022 - how to better understand which water conservation and efficiency programs will have greatest impact in preserving water resources, but doing it in such a way as to protect water dependent natural resources, including aquatic species
- Emphasis on engaging indigenous organizations and encouraging traditional ecological knowledge

Joint Aquatic Sciences Meeting, May 14-20,2022

- Conference theme – *Rapid Changes – Collaborative Solutions*
- Target audience: Scientists, practitioners, policy makers, others
- Call for Abstracts due January 10, 2022
- Registration opens in Spring 2022
- Cost ranges depending on membership/# of days attending
- Hybrid in person/virtual recorded presentations
- More information at <https://jasm2022.aquaticsocieties.org/>
- 5 Year Science Strategy at <https://www.glsiregionalbody.org/science-and-research/>

Co-Chair Brian Eggers

Agenda Items 9-12



MICHIGAN DEPARTMENT OF
ENVIRONMENT, GREAT LAKES, AND ENERGY

9. Program Update

Water Use Advisory Council

December 14, 2021

Outline

- Program Metrics
- WUAU Personnel Update
- Depleted WMA Status Update
- Questions

WUAU Personnel Update

- Austen York starts 1/10/2022
- SSR Geologist 9

Compliance Numbers

July 9, 2021 - November 30, 2021

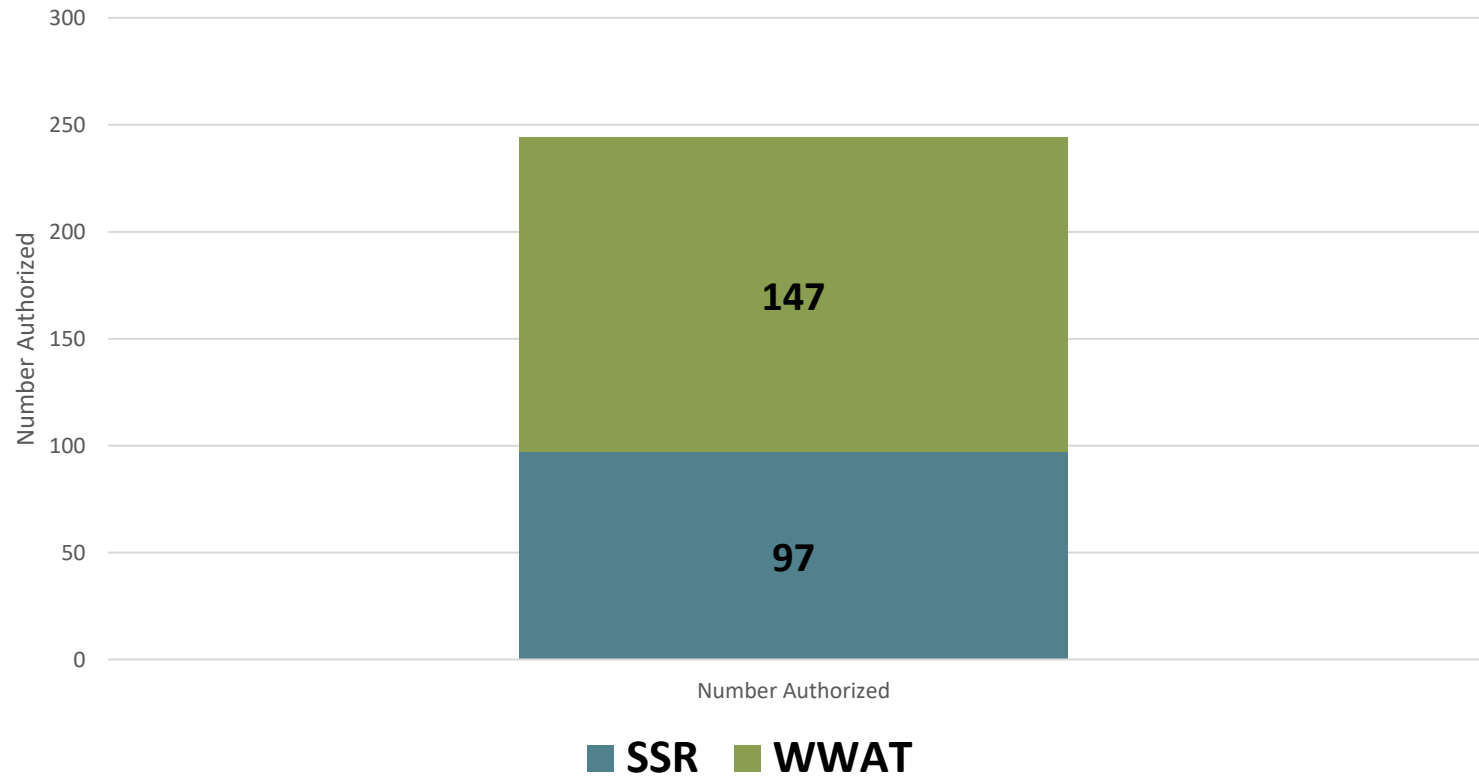
- Compliance Communications 275
 - After the Fact Registrations 20
 - Missing Pump Information Requests 63
 - Revised Registrations 108
 - Installation Verification Requests 84
- Violation Notices 19
- Complaints 7

Quarterly Metrics

October 1-December 6, 2021

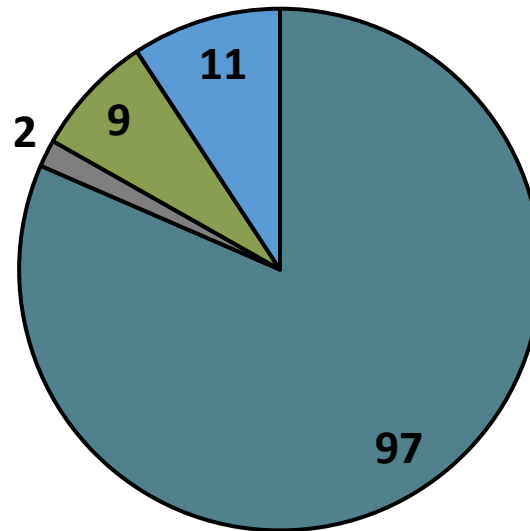
- 3 Pre-screening Reviews Passed
- 1 Pre-screening Reviews Denied
- 0 Pre-screening Reviews Retracted
- 1 327 Permits Issued

LQWs Authorized During Program Year 13: WWAT & SSR



July 9, 2021 – November 30, 2021

Total SSRs Received and Determinations Made During Program Year 13



■ SSRs Authorized ■ Denied ■ Retracted ■ Still Pending

July 9, 2021 – November 30, 2021

Program Year 13 Timeliness

Average Number of Business Days
from Receipt of SSR Request:

9 Days

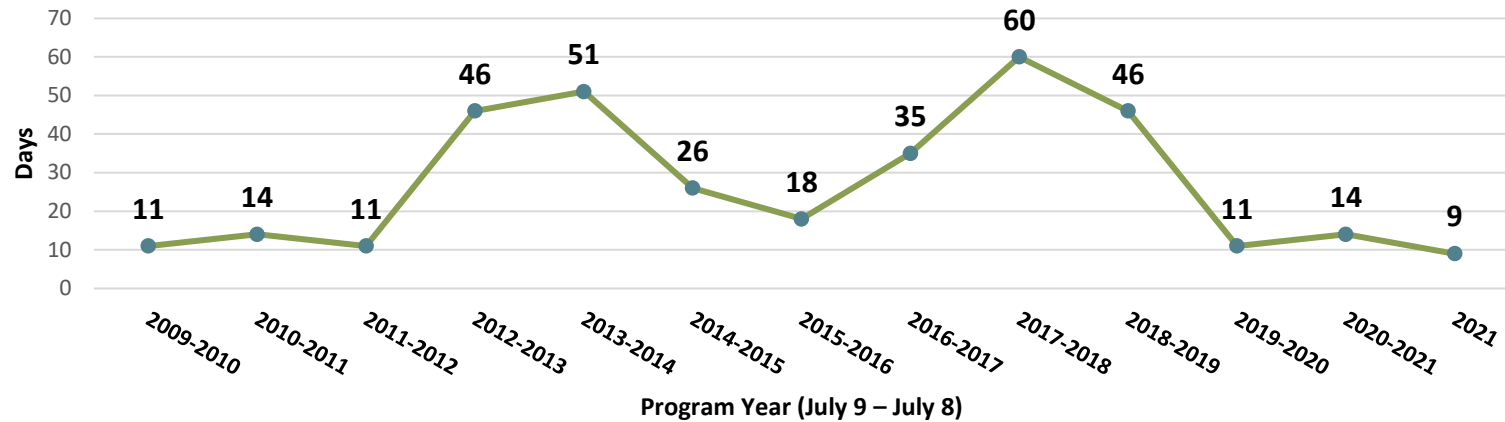
Percentage of SSRs completed
within 10 Business Days:

73%

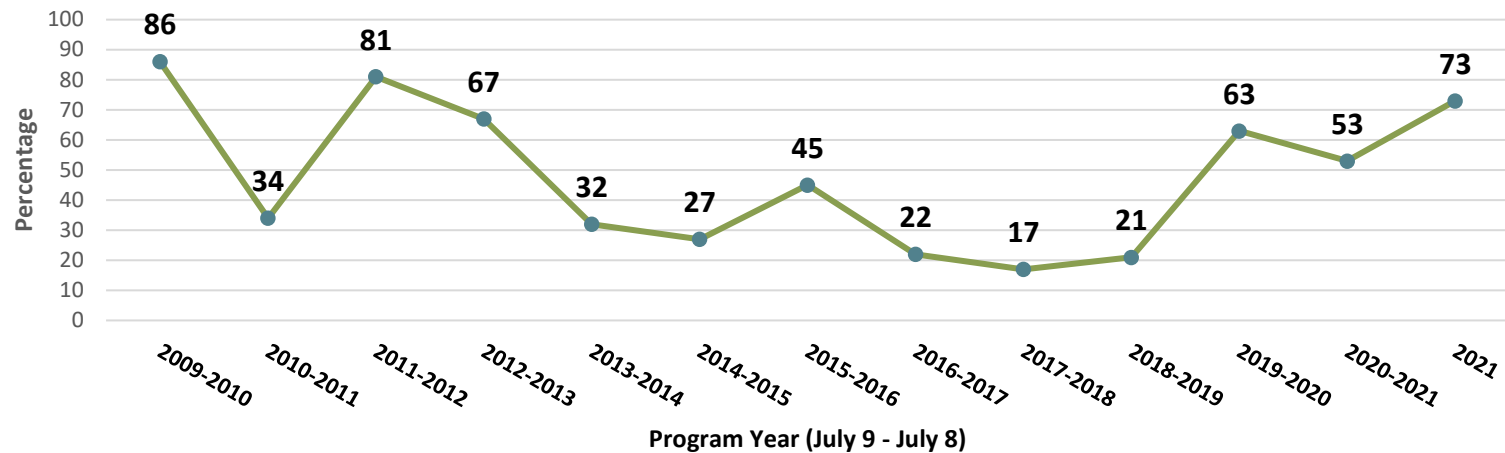
Statutory Deadline: 10 Business Days

July 9, 2021 – November 30, 2021

Average Number of Business Days from Receipt of SSR Request



Percentage of SSRs Completed within 10 Business Days

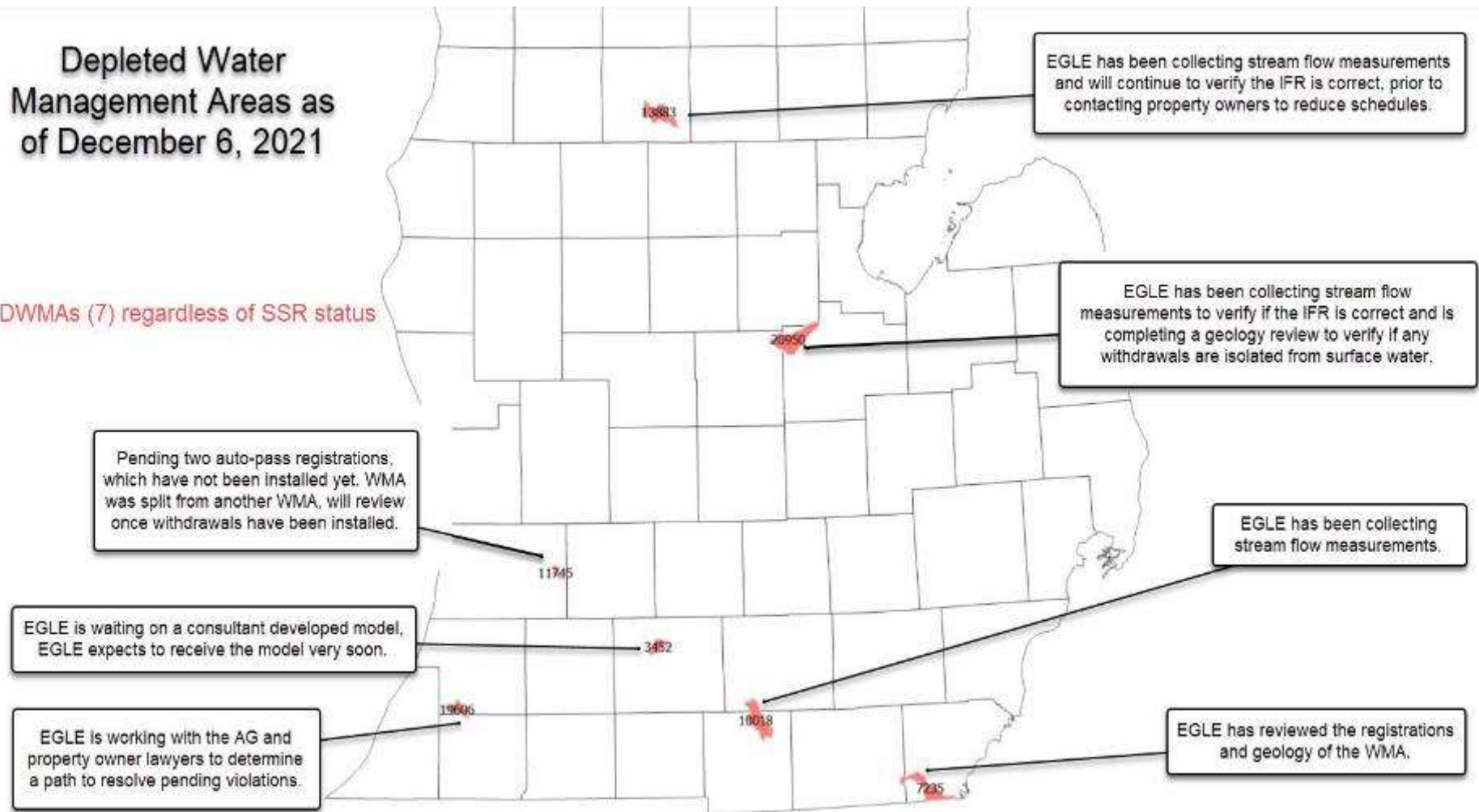


Depleted Watersheds as of 12/6/2021

Name	Number	County	Type	Index Flow (gpm)	Allowable Depletions	Current Depletions
South Branch Kalamazoo River	10018	Hillsdale/Jackson	Cool Stream	1930	482	-357
Greggs Brook	11745	Allegan	Cool stream	853	213	-174
Halfway Creek	7235	Monroe/ Lenawee	Warm Stream	583	140	-101
Dickinson Creek (Station #:041035285)	3452	Calhoun	Cold Transitional Stream	898	39	-65
Osborn Drain (Station #:041015313)	19606	Van Buren/ Cass	Cold Transitional Stream	1571	63	-39
Whitmore Drain	20950	Saginaw/ Gratiot/ Midland	Warm Stream	135	32	-33
Butterfield Creek	13883	Missaukee	Cold Transitional Stream	6732	269	-26

Depleted Water Management Areas as of December 6, 2021

DWMAs (7) regardless of SSR status



Questions?

Jim Milne
Water Use Assessment Unit
EGLE Water Resources Division
517-285-3253
milnej@michigan.gov

Michigan Department of
Environment, Great Lakes, and Energy

800-662-9278

Michigan.gov/EGLE



Follow us at: Michigan.gov/EGLEConnect

10. Next Meeting Dates and Formats

11. Open Comments

12. Motion to Adjourn
